

WHAT IS CLAIMED IS:

1. A method of manufacturing a probe comprising a cantilever beam, a probe tip and a contact area, said method
5 comprising the steps of:

- etching a substrate using a first patterned masking layer as an etch mask, said etching creating a mould in said substrate;
- depositing a first layer on said mould and on said 10 patterned masking layer;
- patterning said first layer to form the probe tip;
- partially under-etching the probe tip using said patterned first layer as a hard mask; and
- peeling off the probe tip from the underlying first 15 patterned masking layer.

2. The method as recited in Claim 1, further comprising the step of using said patterned first layer as a mask to remove said first patterned masking layer.

3. The method as recited in Claim 1, further 20 comprising the step of selectively depositing at least one additional layer on said patterned first layer.

4. The method as recited in Claim 4, wherein said first layer comprises a metal, and wherein said step of selectively depositing comprises the step of plating.

25 5. The method as recited in Claim 5, wherein said first layer comprises Ti, W and Au and said additional layer comprises Ni.

6. The method as recited in Claim 1, further comprising the steps of:

- temporarily spacing apart a substantial part of said probe tip and said underlying first patterned masking layer; and
- attaching a holder chip to said contact area.

7. The method as recited in Claim 1, wherein said partially under-etching of said probe tip under-etches at least the probe tip.

8. The method as recited in Claim 1, wherein said 5 partially under-etching of said probe tip under-etches at least the probe tip and the cantilever beam.

9. The method as recited in Claim 1, further comprising the steps of:

- 10 depositing a second layer on said mould and on said first patterned masking layer; and
- patterning said second layer to form the probe tip.

10. The method as recited in Claim 9, wherein said first and said second layers comprise substantially the same material.

15 11. The method as recited in Claim 10, wherein said material comprises Ti, W and Au.

12. The method as recited in Claim 9, wherein said first and said second layers comprise substantially different material.

20 13. The method as recited in Claim 12, wherein said first layer comprises Ti, W and Au and said second layer comprises Cr or Diamond.

14. The method as recited in Claim 9, further comprising the step of annealing.

25 15. The method as recited in Claim 1, wherein said substrate comprises silicon.

16. The method as recited in Claim 1, wherein said first patterned masking layer comprises one of oxides, nitrides, and oxynitrides.

30 17. A probe comprising a cantilever beam, a probe tip and a contact area, the probe being manufactured by a method comprising the steps of:

- etching a substrate using a first patterned masking layer as an etch mask, said etching creating a mould in said substrate;
 - depositing a first layer on said mould and on said patterned masking layer;
- 5 - patterning said first layer to form the probe tip;
- partially under-etching the probe tip using said patterned first layer as a hard mask; and
 - peeling off the probe tip from the underlying first patterned masking layer.
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18. The probe as recited in Claim 17, wherein the method further comprises:

- depositing a second layer on said mould and on said first patterned masking layer; and
- 15 - patterning said second layer to form the probe tip.
19. A system for manufacturing a probe, the system comprising:
- means for etching a substrate using a first patterned masking layer as an etch mask, said etching means creating a mould in said substrate;
 - means for depositing a first layer on said mould and on said patterned masking layer;
 - means for patterning said first layer to form a probe tip;
 - means for partially under-etching the probe tip using said patterned first layer as a hard mask; and
- 25 - means for peeling off the probe tip from the underlying first patterned masking layer.

20. The system as recited in Claim 19, further comprising:

- 30 - means for depositing a second layer on said mould and on said first patterned masking layer; and

- means for patterning said second layer to form the probe tip.